

REMARKS

Claims 1-12 and 14-43 are pending in the application.

Dependent claim 13 has been cancelled without disclaimer to the subject matter contained therein. The said subject matter of claim 13 has been incorporated into independent claim 1, which now recites an elastomeric phase comprising a polymer having structural units derived from at least one (C₁-C₁₂)alkyl(meth)acrylate monomer. Dependent claim 14 has been amended to change its claim dependency from the cancelled claim 13 to the independent claim 1.

Independent claims 1, 29, 31, 42, and 43 have been amended for clarity to recite an acrylonitrile-styrene-acrylate (ASA) type resin. Said ASA resins represent a rubber modified thermoplastic resin comprising a discontinuous elastomeric phase dispersed in a rigid thermoplastic phase and are taught, for example, in paragraphs 0020-0022 (elastomeric phase) and in paragraph 0026 (rigid thermoplastic phase), and in the examples of the specification.

Independent claims 1, 42, and 43 have been amended for clarity to recite that the elastomeric phase comprises a polymer having structural units derived from at least one (C₁-C₁₂)alkyl(meth)acrylate monomer. This amendment has antecedent basis in the specification, for example, in paragraph 0020.

Independent claim 31 has also been amended for clarity to recite a mixture of monomers in step (b). This amendment has antecedent basis in the specification, for example, in paragraph 0034 and in the examples.

Independent claim 43 has also been amended for clarity to recite a process to improve the resistance to color formation or loss of gloss in a method to make articles manufactured from a thermoplastic composition. This amendment has antecedent basis in the specification, for example, in paragraph 0002 and in examples 21-34.

Dependent claims 17 and 18 have been amended to change the phrase “rubber modified thermoplastic” resin to “ASA type” resin in agreement with antecedent basis in amended claim 1.

The Applicant notes for the record that these claim amendments have been made to clarify the subject matter of the invention, and not in response to any rejection over the prior art. No new matter has been added to the claims under 35 U.S.C. §132 in making the claim amendments.

35 U.S.C. § 103(a) Rejection

The Examiner has rejected claims 1-43 under 35 U.S.C. 103(a) as being unpatentable over **Barren et al.** (U.S. 6,063,844). The Applicant courteously traverses these rejections with respect to the claims as amended.

The Examiner states the following (quote):

- “**Barren et al.** disclose a composition comprising from 15 to 85 parts by weight of a branched polycarbonate, reading on the presently claimed polycarbonate, and from 15 to 85 parts by weight of a rubber modified graft copolymer that contains a discontinuous elastomeric phase dispersed in a continuous rigid thermoplastic phase, wherein at least a portion of the rigid thermoplastic phase is chemically grafted to the elastomeric phase, embracing the presently claimed rubber modified thermoplastic resin.”
- “In essence, the disclosure of the reference differs from the present claims in not expressly exemplifying a rubber modified graft copolymer wherein the rigid thermoplastic phase further contains units derived from (meth)acrylate monomers. In this regard it is noted that the reference expressly teaches that the rigid phase can be derived from one or more monomers selected from alkyl (meth)acrylates, vinyl aromatics and unsaturated nitriles (column 7, lines 34-38). Accordingly, it would have been obvious to one having ordinary skill in the art to have used a rubber

modified graft copolymer containing a rigid phase derived from (meth)acrylate monomers in addition to the exemplified styrene and acrylonitrile monomers with the reasonable expectation of success since only its additive effect would have been expected. Absent evidence of unusual or unexpected results, no patentability can be seen in the presently claimed subject matter.”

A brief description of embodiments of the instant invention will aid the discussion. The independent claims of the instant invention recite polycarbonate blends with an acrylonitrile-styrene-acrylate (ASA) type resin comprising a rigid thermoplastic phase comprising structural units derived from at least one vinyl aromatic monomer, at least one monoethylenically unsaturated nitrile monomer, and at least one monomer selected from the group consisting of (C₁-C₁₂)alkyl- and aryl-(meth)acrylate monomers. The instant inventors have discovered that such blends exhibit a surprisingly high retention of color properties and gloss upon exposure to different elevated temperatures during molding in comparison to blends comprising ASA-type resin prepared without structural units in the rigid phase derived from at least one (C₁-C₁₂)alkyl- and aryl-(meth)acrylate monomer. This advantage is clearly shown in the specification in examples 21-25 versus the appropriate comparative example in Table 4 (kindly see paragraph 0054), and in examples 26-29 versus the appropriate comparative example in Table 5 (kindly see paragraph 0056), and in other examples and comparative examples of the invention. This sought-after advantage provides a broader range of processing conditions for making articles from said polycarbonate-ASA blends, making such processes more versatile and more economical.

Barren is directed to compositions demonstrating the efficacy of a particular stabilizer package in blends of polycarbonate with rubber modified graft copolymers (kindly note required blend components (c), (d), and (e) in **Barren**, Summary of the Invention, column 2). As shown by **Barren**, the particular stabilizer package is useful for improving the color stability after heat aging of test parts all initially molded under the same temperature conditions (kindly see column 15, lines 6-10). The blends of polycarbonate and particular stabilizer package of **Barren** include a laundry list of

speculative rubber modified graft copolymers. Although **Barren** suggests that a variety of monomers may be employed in the compositions of rubber modified graft copolymers, there are no examples in **Barren** exemplifying any rubber modified copolymers other than acrylonitrile-butadiene-styrene (ABS) resins. Polycarbonate blends with ABS having non-polar diene-derived rubber (i.e. derived from butadiene) have quite different properties compared to polycarbonate blends with ASA resins of the instant invention, and the two blends are not used interchangeably. In particular, polycarbonate blends with ASA are often used in articles requiring weatherability, which property is not provided by polycarbonate blends with ABS.

Aside from exemplified ABS, there is no motivation provided in **Barren** to choose any one of the myriad rubber modified graft copolymers rather than any other. More particularly, in **Barren** there is no guidance for one skilled in the art that would lead to the choice of any one rubber modified graft copolymer rather than any other for any particular purpose.

In addition, **Barren** does not address the problem identified and solved by the instant inventors. There is no teaching or suggestion in **Barren** directed to a process to improve the resistance to color formation or loss of gloss in any method to make articles manufactured from a thermoplastic composition comprising at least one polycarbonate and an ASA type resin comprising a discontinuous elastomeric phase dispersed in a rigid thermoplastic phase, wherein the rigid thermoplastic phase comprises structural units derived from at least one vinyl aromatic monomer and at least one monoethylenically unsaturated nitrile monomer, which process comprises including in the rigid thermoplastic phase structural units derived from at least one monomer selected from the group consisting of (C₁-C₁₂)alkyl- and aryl-(meth)acrylate monomers as required in independent claim 43 of the instant invention. The inventors have shown in the examples of the invention that said blends of polycarbonate with ASA-type resins as taught and claimed therein provide unexpectedly improved resistance to color formation or loss of gloss in a method to make articles therefrom, as well as other benefits, in direct comparison to properties seen in the corresponding comparative examples of the invention which do not comprise ASA-type resins as taught and claimed therein.

In addition, although **Barren** teaches that elastomeric phases may have weight average particle sizes of 50 to 800 nm (column 7, lines 21-25), there is no teaching or suggestion in **Barren** directed to elastomeric phases consisting of a mixture of particles sizes with at least two number average particle size distributions as required in claims 19 and 20 of the instant invention.

Also, there is no teaching in **Barren** of any rubber modified copolymer wherein the rigid thermoplastic phase is derived from a process comprising at least two-steps as required in claims 31-38 of the instant invention.

In summary, **Barren** is directed to the efficacy of a particular stabilizer package in speculative polycarbonate blends exemplified by polycarbonate-ABS blends. There is no motivation in **Barren** for anyone skilled in the art to provide or employ any polycarbonate blend with an ASA-type resin comprising a rigid thermoplastic phase comprising structural units derived from at least one monomer selected from the group consisting of (C₁-C₁₂)alkyl- and aryl-(meth)acrylate monomers for any purpose as is taught and claimed in the instant invention.

Furthermore, no one skilled in the art can derive any guidance from **Barren** for employing any polycarbonate blend with an ASA-type resin comprising a rigid thermoplastic phase comprising structural units derived from at least one monomer selected from the group consisting of (C₁-C₁₂)alkyl- and aryl-(meth)acrylate monomers for any particular purpose as is taught and claimed in the instant invention. The instant inventors have shown that polycarbonate blends comprising said ASA-type resins have unexpectedly beneficial properties, particularly in providing improved resistance to color formation or loss of gloss in methods to make articles manufactured from said blends. Therefore, it would not have been obvious to one of ordinary skill in the art "...to have used a rubber modified graft copolymer containing a rigid phase derived from (meth)acrylate monomers in addition to ... styrene and acrylonitrile monomers..." based on any guidance provided in **Barren**.

In view of these remarks, it is respectfully requested that the rejection of claims under 35 U.S.C. 103(a) as being unpatentable over **Barren** be withdrawn.

In view of the foregoing, the Applicant respectfully submits that the application is in condition for allowance. Favorable reconsideration and prompt allowance of the application are respectfully requested.

Should the Examiner believe that anything further is needed to place the application in even better condition for allowance, the Examiner is requested to contact the Applicant's undersigned representative at the telephone number below.

Respectfully submitted,



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